IN THE CLAIMS

This listing of claims replaces all prior versions, and listings, in this application.

1. (currently amended) Process for the biochemical synthesis of 6-amino caproic acid wherein either 6-aminohex-2-enoic acid of formula [1] (6-AHEA)

$$H_2N\text{-}CH_2\text{-}CH_2\text{-}CH_2\text{-}CH{=}CH\text{-}COOH \qquad [1]$$

or wherein 6-amino-2-hydroxy-hexanoic acid (6-AHHA), a compound capable of being transformed into 6-aminohex-2-enoic acid, is treated with an enzyme having α,β-enoate reductase activity towards molecules containing an α,β-enoate group and a primary amino group, in particular with an enzyme having α,β-enoate reductase activity towards 6-aminohex-2-enoic acid in the presence of NADH or NADPH to synthesize 6-amino caproic acid.

2. (currently amended) Process for the biochemical synthesis of 6-amino caproic acid wherein either 6-aminohex-2-enoic acid of formula [1] (6-AHEA)

$$H_2N\text{-}CH_2\text{-}CH_2\text{-}CH_2\text{-}CH{=}CH\text{-}COOH \qquad [1]$$

or 6-amino-2-hydroxy-hexanoic acid (6-AHHA), a compound capable of being transformed into 6-aminohex-2-enoic acid, is treated with an enzyme having α,β-enoate reductase activity towards molecules containing an α,β-enoate group and a primary amino group, characterized in that the enzyme having α,β-enoate reductase activity is an enzyme originating from a microorganism selected from the group consisting of species of *Acetobacterium* sp., *Acremonium* sp., *Agrobacterium* sp., *Burkholderia* sp., *Cephalosporium* sp., *Clostridium* sp., *Escherichia* sp., *Moorella* sp., *Ochrobactrum* sp., *Pseudomonas* sp., *Salmonella* sp., *Shigella* sp., *Tilachlidium* sp., *Yersinia* sp., and *Vibrio* sp. in the presence of NADH or NADPH to synthesize 6-amino caproic acid.

3. (currently amended) Process for the biochemical synthesis of 6-amino caproic acid wherein either 6-aminohex-2-enoic acid of formula [1] (6-AHEA)

$$H_2N\text{-}CH_2\text{-}CH_2\text{-}CH_2\text{-}CH{=}CH\text{-}COOH \qquad [1]$$

or 6-amino-2-hydroxy-hexanoic acid (6-AHHA), a compound capable of being transformed into 6-aminohex-2-enoic acid, is treated with an enzyme having α,β-enoate

reductase activity towards molecules containing an α,β-enoate group and a primary amino group, characterized in that the enzyme having α,β-enoate reductase activity is an enzyme originating from *Acremonium* sp., *Clostridium* sp., *Moorella* sp. or *Ochrobactrum* sp. in the presence of NADH or NADPH to synthesize 6-amino caproic acid.

4. (previously presented) Process according to claim 3, characterized in that the enzyme having α,β-enoate reductase activity is an enzyme from *Acremonium strictum* CBS114157, *Clostridium tyrobutyricum* DSM1460, *Moorella thermoacetica* DSM1974, *Ochrobactrum anthropi* NCIMB41200, or *Clostridium kluyveri* DSM555.

5. (currently amended) Process for the biochemical synthesis of 6-amino caproic acid wherein either 6-aminohex-2-enoic acid of formula [1] (6-AHEA)

$$H_2N\text{-}CH_2\text{-}CH_2\text{-}CH_2\text{-}CH{=}CH\text{-}COOH \qquad [1]$$

or 6-amino-2-hydroxy-hexanoic acid (6-AHHA), a compound capable of being transformed into 6-aminohex-2-enoic acid, is treated with an enzyme having α,β-enoate reductase activity towards molecules containing an α,β-enoate group and a primary amino group, characterized in that the enzyme having α,β-enoate reductase activity has aerostable α,β-enoate reductase activity and is an enzyme originating from a microorganism selected from the group consisting of species of *Agrobacterium* sp., *Burkholderia* sp., *Escherichia* sp., *Pseudomonas* sp., *Salmonella* sp., *Shigella* sp., *Yersinia* sp., and *Vibrio* sp. in the presence of NADH or NADPH to synthesize 6-amino caproic acid.

6. (currently amended) Process for the biochemical synthesis of 6-amino caproic acid wherein either 6-aminohex-2-enoic acid of formula [1] (6-AHEA)

$$H_2N\text{-}CH_2\text{-}CH_2\text{-}CH_2\text{-}CH{=}CH\text{-}COOH \qquad [1]$$

or 6-amino-2-hydroxy-hexanoic acid (6-AHHA), a compound capable of being transformed into 6-aminohex-2-enoic acid, is treated with an enzyme having aerostable α,β-enoate reductase activity towards molecules containing an α,β-enoate group and a primary amino group, characterized in that the enzyme having aerostable α,β-enoate

reductase activity is an enzyme originating from an *Escherichia coli* species in the presence of NADH or NADPH to synthesize 6-amino caproic acid.

7. (previously presented) Process according to claim 6, characterized in that the enzyme having aerostable α,β-enoate reductase activity is an enzyme originating from *Escherichia coli* K12.

8. (previously presented) Process according to claim 1, characterized in that 6-aminohex-2-enoic acid is being converted into 6-amino caproic acid at a pH in the range from 3 to 9.

9. (previously presented) Process according to claim 8, characterized in that the pH is in the range of from 4 to 8.

10. (original) Process according to claim 9, characterized in that the pH is in the range of from 5 to 8.

11. (previously presented) Process according to claim 8, characterized in that the pH is in the range of from 5.5 to 7 under anaerobic conditions or of from 6.5 to 8 under aerobic conditions.

12. (previously presented) Process according to claim 1, characterized in that the process is carried out in a host organism selected from the group consisting of genera of *Aspergillus*, *Bacillus*, *Corynebacterium*, *Escherichia* and *Pichia*.

13. (currently amended) Process according to claim 12, characterized in that the process is carried out in a host organism selected from the group consisting of *Escherichia coli*, ~~*Bacillus,*~~ *Corynebacterium glutamicum*, *Aspergillus niger* and *Pichia pastoris* host organisms.

14. (previously presented) Process according to claim 12, characterized in that in the host organism an α,β-enoate reductase gene encoding an enzyme having α,β-enoate reductase activity towards molecules containing an α,β-enoate group and a primary amino group is cloned and expressed.

Claims 15-27 (canceled)

28. (currently amended) A process for biochemically synthesizing 6-amino caproic acid, the process comprising treating 6-aminohex-2-enoic acid of formula [1] (6-AHEA)

$$H_2N\text{-}CH_2\text{-}CH_2\text{-}CH_2\text{-}CH{=}CH\text{-}COOH \qquad [1]$$

with an enzyme having α,β-enoate reductase activity towards molecules containing an α,β-enoate group and a primary amino group in the presence of NADH or NADPH to synthesize 6-amino caproic acid.

29. (previously presented) The process according to claim 28, wherein the enzyme having α,β-enoate reductase activity is an enzyme originating from a microorganism selected from the group consisting of species of *Acetobacterium* sp., *Acremonium* sp., *Agrobacterium* sp., *Burkholderia* sp., *Cephalosporium* sp., *Clostridium* sp., *Escherichia* sp., *Moorella* sp., *Ochrobactrum* sp., *Pseudomonas* sp., *Salmonella* sp., *Shigella* sp., *Tilachlidium* sp., *Yersinia* sp., and *Vibrio* sp.

30. (previously presented) The process according to claim 28, wherein the enzyme having α,β-enoate reductase activity is an enzyme originating from *Acremonium* sp., *Clostridium* sp., *Moorella* sp., or *Ochrobactrum* sp.

31. (previously presented) The process according to claim 30, wherein the enzyme having α,β-enoate reductase activity is an enzyme from *Acremonium strictum* CBS114157, *Clostridium tyrobutyricum* DSM1460, *Moorella thermoacetica* DSM1974, *Ochrobactrum anthropi* NCIMB41200, or *Clostridium kluyveri* DSM555.

32. (previously presented) The process according to claim 28, wherein the enzyme having α,β-enoate reductase activity has aerostable α,β-enoate reductase activity and is an enzyme originating from a microorganism selected from the group consisting of species of *Agrobacterium* sp., *Burkholderia* sp., *Escherichia* sp., *Pseudomonas* sp., *Salmonella* sp., *Shigella* sp., *Yersinia* sp., and *Vibrio* sp.

33. (previously presented) The process according to claim 32, wherein the enzyme having aerostable α,β-enoate reductase activity is an enzyme originating from an *Escherichia coli* species.

34. (previously presented) The process according to claim 28, wherein 6-aminohex-2-enoic acid is being converted into 6-amino caproic acid at a pH in the range from 3 to 9.

35. (previously presented) The process according to claim 34, wherein the pH is in the range of from 4 to 8.

36. (previously presented) The process according to claim 35, wherein the pH is in the range of from 5 to 8.

37. (previously presented) The process according to claim 34, wherein the pH is in the range of from 5.5 to 7 under anaerobic conditions or of from 6.5 to 8 under aerobic conditions.

38. (previously presented) The process according to claim 28, wherein the process is carried out in a host organism selected from the group consisting of genera of *Aspergillus, Bacillus*, *Corynebacterium*, *Escherichia*, and *Pichia*.

39. (currently amended) The process according to claim 38, wherein the process is carried out in a host organism selected from the group consisting of *Escherichia coli*, ~~*Bacillus,*~~ *Corynebacterium glutamicum*, *Aspergillus niger*, and *Pichia pastoris* host organisms.

40. (previously presented) The process according to claim 38, wherein the host organism an α,β-enoate reductase gene encoding an enzyme having α,β-enoate reductase activity towards molecules containing an α,β-enoate group and a primary amino group is cloned and expressed.